#12 Appeal Brief 2635 $
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Docket No.: GR 99 P 1912

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MAIL STOP: APPEAL BRIEF-PATENTS

By: Werner Stemer Date: May 3, 2004

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
Before the Board of Patent Appeals and Interferences

Applic. No.	:	09/994,195	Confirmation No.: 8292
Inventor	:	Thomas Reisinger et al.	
Filed	:	November 26, 2001	
Title	:	Method and Configuration for Remote Access Control	
TC/A.U.	:	2635	
Examiner	:	Brian A. Zimmerman	
Customer No.	:	24131	

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Hon. Commissioner for Patents
Alexandria, VA 22313-1450

BRIEF ON APPEAL

Sir:

This is an appeal from the final rejection in the Office action dated December 15, 2003, finally rejecting claims 1-13 and 16-19.

Appellants submit this *Brief on Appeal* in triplicate, including payment in the amount of $330.00 to cover the fee for filing the *Brief on Appeal*.

Real Party in Interest:

This application is assigned to Siemens Aktiengesellschaft of München, Germany. The assignment will be submitted for recordation upon the termination of this appeal.

Related Appeals and Interferences:

No related appeals or interference proceedings are currently pending which would directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

Status of Claims:

Claims 1-13 and 16-19 are rejected and are under appeal. Claims 14 and 15 were cancelled in an amendment filed on September 15, 2003.

Status of Amendments:

Claim 8 was amended after final rejection. An *amendment under 37 CFR § 1.116* was filed on February 27, 2004. The Primary Examiner stated in an *Advisory Action* dated March 15, 2004, that the amendment would be entered subject to the filing of an appeal. The Primary Examiner also stated that the request for reconsideration had been considered but did not place the application in condition for allowance.

Summary of the Invention:

As stated in the first paragraph on page 1 of the specification of the instant application, the invention relates to a method for remote access control, in

particular for radio access control to the interior and/or for activation of operating functions of a motor vehicle. The access control is effected by a configuration provided with a transceiver unit for transmitting an interrogation signal or request signal and for receiving access code signals. An evaluation unit is connected to the transceiver unit, for evaluating received access code signals and for outputting an access enable or inhibit signal as a function of the evaluation result. A number of access code transmitters receive the request signal and transmit a respective specific access code signal as a response to the reception of the interrogation signal. The invention further pertains to a configuration for carrying out the method.

Appellants explained on page 13 of the specification, line 5, that a passive entry access control configuration 1 comprises a number of ID transmitters 10 and a vehicle unit 20 – as illustrated in the fragmentary functional block diagram of Fig. 1. The vehicle unit 20 is also referred to as a transceiver (transmitter/receiver) unit 20.

Appellants further explained on page 13 of the specification, line 15, that each ID transmitter 10 comprises a data memory 11, wherein a transmitter-specific code ID1, ID2, ... IDn is stored, and which holds not only the actual access code but also user-specific data relating to the vehicle holder. Furthermore, each ID transmitter has a PN code memory 13, wherein a respective spread code that is characteristic for that transmitter is stored. The spread code which is specified for a given ID transmitter is applied to the respective access and user code in a spread code processing stage 15 (which is symbolized as a multiplier in the figure) in each ID transmitter 10, and RF processing is carried out in a manner known per se in an RF stage 17 (which is arranged downstream from the spread code processing stage

15) to form a transmission signal, which is transmitted via a non-illustrated RF antenna. Furthermore, each ID transmitter 10 has an interrogation signal receiver 19 which, on receiving an interrogation signal (also referred to as a polling signal, request signal), activates the components mentioned above to output a response signal. The simplified block diagram representation chosen here should be understood as meaning that the interrogation signal receiver 19 has a controller for sequence control of the outputting of a response signal; details of the function complexes for interrogation signal reception and response signal control are known per se, and therefore do not need to be explained in any more detail. The signal processing sequence, which is essential in the context of implementation of the invention, in the ID transmitter 10 is explained in more detail in Fig. 2 and in the associated description further below.

As outlined on page 14 of the specification, starting on line 19, the vehicle unit 20 comprises an interrogation signal generator 21 and an interrogation signal transmitter 23, connected to the output of the interrogation signal generator 21, in order to produce the interrogation signal. Existing systems use relatively low frequencies (for example 125 kHz, inductive transmission) for this interrogation signal in order to accurately limit the area wherein the interrogation signal is effective, with the signal being transmitted by antennas (not shown here) in parts of the bodywork of a vehicle. In principle, however, any desired transmission path is feasible for this interrogation signal. To this extent, the operation of the access control configuration 1 is also known per se and does not need to be explained in any more detail. The essential feature is that, on receiving a corresponding initiation signal (for example from a pushbutton on the door handle of the vehicle), a

microcontroller 25 in the vehicle unit 20 causes an individual, generally applicable interrogation signal to be produced by the interrogation signal generator 21 for all the ID transmitters 10, and at the same time controlling parallel processing of the response signals arriving in response to this from the ID transmitters. The response signals are in turn received in a manner known per se via an RF antenna, are processed at RF in an RF stage 26, and are digitized in an A/D converter 27 connected downstream from the RF stage. As illustrated in the figure, the digitization process is followed by parallel processing in a number of correlator stages 28 corresponding to the number n of permissible ID transmitters 10, with despreading in each case being carried out by means of the spread code which was used for spreading at the transmitter end and is stored in a vehicle spread code memory 29 in the vehicle unit. This process is sketched once again in Fig. 3, and further below in the description. This process results in the despread access and user codes ID1, ID2 and IDn, which are referred to in Fig. 1 as the "polling result 1," "polling result 2" and, respectively, "polling result n," from the ID transmitters which are located in the polling area of the vehicle unit 20 and which transmit a response signal, for further processing and checking in a manner known per se, with these responses being provided at the same time according to the invention, and the access code processing thus being speeded up. The method of digital signal processing (DSP) illustrated in Fig. 1 represents the fundamental principle of the preferred embodiment. The DSP algorithm can be modified depending on the computation capacity in order to carry out application-specific optimization functions. For example, the dynamic range can be extended by methods such as "Multiuser Detection of CDMA by Iterated Soft-Cancellation

(Turbo Multiuser Detection)". The relevant literature contains a large number of approaches for such optimization options.

Appellants stated on page 16 of the specification, line 18, that, in general, the digital signal processing can no longer be split into individual, independent branches. The configuration sketched in Fig. 1 would then be in the form, shown in Fig. 5, of a modified configuration 1' with DSP processing block 28/29' for parallel digital processing of the received signal. Fig. 5 requires no further explanation, against the background of the above explanation of Fig. 1.

As set forth on page 17 of the specification, line 1, Fig. 2 illustrates the individual stages for producing a spread data signal (access and user code), which is carried out in an advantageous manner in the logic and/or digital processing area of ID and/or access code transmitter 10. First of all, a spread code "PN signal" is produced from a clock signal "clock" in the manner sketched in the upper part of Fig. 2 by means of a feedback shift register SR and an addition stage ADD. The spread code obtained during this process is then linked, by multiplication, to the actual data signal in the processing stage 15 (see Fig. 1). The signal profile of the data signal, of the spread code and of the spread data signal is shown - using a simplified example - in the three timing diagrams in the central area of Fig. 2.

It is also mentioned on page 17 of the specification, line 15, that the lower area of Fig. 2 shows the final step of BPSK modulation of an RF carrier with the spread data signal (obtained in the microcontroller MC) in a BPSK modulator MOD in order to obtain a transmission signal.

Appellants stated in the last paragraph on page 17 of the specification, line 20, that Fig. 3 shows (once again in the form of an outline sketch) how the signal received in the vehicle unit 20 (Fig. 1) is subjected, in a single receiving section (front end) R, to filtering in a filter stage F and further processing in a step-down mixer M, arranged downstream from this, before the signal is subjected to digitization in an A/D converter AD (corresponding to the block 27 in Fig. 1), and is subjected to logical processing in the logical processing stage DSP, which at the same time supplies the sampling signal for the A/D converter AD, with synchronization, correlation and demodulation for recovery of the access and user code.

Appellants explained on page 18 of the specification, line 6, that Fig. 4 shows a sketch, in somewhat more detail, of one example of spread code processing, as it is carried out in the processing stages 15 of the ID transmitters 10 at the transmitter end in the access control configuration 1 shown here, and which corresponds to the corresponding despreading at the receiver end in the correlator stages 29 in the vehicle unit 20.

It is also stated on page 18 of the specification, line 145, that, for simplicity, it is assumed that the access code to be transmitted is given by a sequence a(n) of bits which are at a time interval of, or have a symbol duration of, T. It is also assumed that the symbol duration T is equal to the time interval T_b between two source symbols and that a(n) is formed from bipolar values +1, -1, which are assumed to occur with the same probability. The spreading process in the model illustration includes the following step: first of all, the sequence ã(k) is produced by step-up

sampling with the spread factor L. This is done by inserting (L-1) zeros at the same interval as the chip duration T_c between two respective values of a(n). The association between the spread sequence and the individual bits is in this model regarded as filtering of the step-up-sampled bit sequence $\tilde{a}(k)$ using an FIR filter. The filter coefficients of this FIR filter are the L bipolar elements of the spread sequence b (which is shown in the box in the first line in Fig. 4). The sequence x(k) produced during the spreading process is now wherein by the spread sequence. A D/A converter converts the sequence x(k) to a sequence $x_0(t)$ of dirac pulses with a time interval T_c, and this is followed by a pulse forming with a freely variable pulse shape to form a transmission signal $s_0(t)$, which is represented mathematically as the result of convolution of $x_0(t)$ and the inverse Fourier transform of the frequency response of the pulse forming process. (To simplify the illustration, this model does not include modulation onto a carrier frequency.)

As set forth in the last paragraph on page 19 of the specification, line 16, the implementation of the invention is not restricted to the described exemplary embodiments or to the given explanatory notes. Those of skill in the pertinent art will readily understand that a large number of modifications are likewise possible.

<u>References Cited</u>:

U.S. Patent No. 4,868,915	Anderson, III et al.	Sep 1989;
U.S. Patent No. 5,432,813	Barham et al.	Jul 1995;
U.S. Patent No. 5,682,403	Tu et al.	Oct 1997;
U.S. Patent No. 5,940,006	MacLellan et al.	Aug 1999;
U.S. Patent No. 6,104,333	Wood, Jr.	Aug 2000;

U.S. Patent No. 6,353,406 B1 Lanzl et al. Mar 2002.

Issues

1. Whether or not claims 1, 4, 5, and 7 are anticipated by Wood, Jr. (hereinafter "Wood") under 35 U.S.C. § 102(e).

2. Whether or not claims 8, 10-17 are obvious over Wood and further in view of Barham et al. (hereinafter "Barham") under 35 U.S.C. § 103.

3. Whether or not claims 2 and 9 are obvious over Wood and Barham et al. and further in view of Anderson under 35 U.S.C. § 103.

4. Whether or not claim 3 is obvious over Wood in view of MacLellan under 35 U.S.C. § 103.

5. Whether or not claims 6 and 19 are obvious over Wood, MacLellan, and Barham et al., and further in view of Lanzl under 35 U.S.C. § 103.

6. Whether or not claim 18 is obvious over Wood in view of Tu et al. under 35 U.S.C. § 103.

Grouping of Claims:

Claims 1 and 8 are independent. Claims 2-7 depend from claim 1. Claims 9-13 and 16-19 depend from claim 8. The patentability of claims 1 and 8 is argued separately. That is, claim 8 does not stand or fall with claim 1. Claims 2-7 stand or fall with claim 1. Claims 9-13, 16-19 stand or fall with claim 8.

It will be understood that this grouping of the claims applies to this Appeal Brief only. Appellants do not concede or give up their right to further pursue the subject matter of the dependent claims or additional subject matter contained in the specification. The simplified grouping is provided in an effort to simplify the issues before the Board and to expedite the appeal.

Arguments:

In light of the above grouping of the claims, it will be necessary to address issues 1 and 2 only, namely, the anticipation rejection of claim 1 over Wood and the obviousness rejection of claim 8 over the combined teachings of Wood and Barham.

Issue 1:

The anticipation rejection over Wood under 35 U.S.C. § 102(e) is clearly in error. Appellants believe that the rejection of claim 1 is based on a misunderstanding and an incorrect interpretation, on the Primary Examiner's part, of the reference Wood.

Anticipation is established only when a single prior art reference discloses, expressly or under the principles of inherency, each and every element of a claimed invention as well as disclosing structure which is capable of performing the recited functional limitations. RCA Corp. v. Applied Digital Data Sys., Inc., 730 F.2d 1440, 221 USPQ 385 (Fed. Cir. 1984). W.L. Gore and Assoc., Inc. v. Garlock, Inc., 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983).

We do not disagree with the Primary Examiner's statement that Wood discloses several transponders that can respond simultaneously. While this is correct, the system of Wood, upon recognizing that more than one transponder has answered immediately recognizes that a collision is present and that the interrogator 26 is required to interrogate the transponders anew.

With specific reference to the disclosure in Wood, details of the arbitration that is triggered upon recognizing a collision is found in columns 15 and 16 and the corresponding information with regard to the time delay that is introduced in the replies upon the detection of a collision is found in columns 17 and 18. More specifically, Wood provides the following disclosure:

> Details of Arbitration
> The arbitration of more than one tag per interrogator 26 is accomplished by using an Arbitration Value and an Arbitration Mask during an Identify command . . . . If there are multiple devices 12 responding, the interrogator 26 will detect a collision and will start the arbitration sequence. . . . To start the arbitration sequence among multiple tags, the interrogator 26 instructs the tags to clear their IDENTIFY_ LOCKOUT bit and (possibly) re-randomize their RandomValueLd values . . . . If any collisions are detected at this mask level, the mask would be widened again by one bit, and so on through the eight bit wide mask (256 numbers).

Wood, cols. 15-16.

The above-noted arbitration is made possible by masking the various responses with a time delay so that the individual transponders are time-delayed relative to one another so that they will not arrive simultaneously at the interrogator. Wood explains with specificity.

> Time Delay Reply
> Such is the case when, for example, more than one device attempts to reply to one or more interrogator(s) . . . . Responsive to receiving the RF communication data from interrogator 26, the communication devices preferably perform an operation directed to determining which devices need to reply to the interrogator . . . individual devices 12 include a delay circuitry which calculates their own individual delays. Preferably, such calculated delays are used to define amounts of time which are different as between those responding to transmitting devices 12.

Wood, cols. 17-18.

In simplistic terms, when a collision is found to be existent in the Wood system, the interrogator 26 is driven with an arbitration sequence which then provides for the transponders to be queried in sequence. It is thus entirely clear from the disclosure of Wood that when several transponders answer simultaneously, the responses <u>cannot</u> be <u>evaluated.</u> As a result, or as a solution, the transponders are then queried in series.

If we now compare the disclosure of Wood, as properly interpreted, with the claimed invention, we find that the claimed invention cannot be anticipated by the reference. The method as claimed provides for at least two limitations that are not found in the reference, yet that are critical with regard to the invention. Claim 1 requires the steps of:

> *transmitting with each of the access code transmitter . . . substantially simultaneously; and*
>
> *receiving the access code signals . . . substantially simultaneously, and separating the access code signals . . . .*

The access code signals are received simultaneously (possibly with slight temporal deviations due to environmental influences) at the interrogating unit. Then the access code signals are separated, according to claim 1 on a basis of the specific spread sequences applied to the signals.

This is different in the prior art: When response signals from more than one access code transmitters are received simultaneously, Wood recognizes a collision and starts a revised interrogation so that the response signals, i.e., the access code signals, can be received and processed in sequence as opposed to in parallel. That is, if the *transmitting* step is satisfied in Wood (before arbitration, when several transmitters respond simultaneously), the *separating* step is not satisfied because Wood, instead, prompts for new and temporally separated responses. After the response timing has been reset (arbitration, time delay), the transmitters no longer transmit simultaneously and, accordingly, the *transmitting* step is not met.

The Primary Examiner appears to place great emphasis on the statement in the reference Wood concerning *spread spectrum* processing. Wood explains:

> If desired, the formatted reply is spread spectrum encoded by the spread spectrum processing circuit 40. The reply is then modulated by the transmitter 32. The transmitter 32 is capable of transmitting using different modulation schemes, and the modulation scheme is selectable by the interrogator 26.

Wood, col. 16, line 65, to col. 17, line 3. This does not mean, as apparently suggested by the Examiner, that Wood's signals are processed in parallel. Spread spectrum (DSSS, FHSS) is advantageously used in Wood's case for two reasons: Spread spectrum signal transmission provides a great deal of security and the signals are highly unlikely to interfere with other signals.

Spread spectrum is utilized to transmit a signal having a given bandwidth within a transmission channel having a much broader bandwidth. The signal becomes nearly entirely transparent as it is distributed over many different frequencies during the transmission, and the potential for interference is greatly reduced even though the transmission band is very much the same as the other commercial frequencies with which the signal might otherwise interfere.

It is indeed possible to transmit several signals within the same frequency band in spread spectrum without causing interference. The mention of spread spectrum technology by Wood does not, however, mean that the signals from various responders are processed in parallel. It only means that spread spectrum transmission may be utilized "if desired," which desire would likely be driven by security and interference considerations. It does not mean that spread spectrum transmission should be used to transmit several responses simultaneously and to process the response signals in parallel. Wood, after all, teaches just the opposite. Wood provides instead for arbitration and time delay processing if a collision among responses is detected.

Wood's system recognizes a <u>collision</u> when several transponders respond. If a collision is recognized, the transponders are interrogated in sequence. This, of course, is entirely unnecessary with the claimed method according to claim 1.

Claim 1 is not anticipated by Wood under 35 U.S.C. § 102(e).

Issue 2:

The remote access control configuration defined in claim 8 provides for the simultaneous interrogation and simultaneous response. Most importantly with regard to the primary reference Wood, we recite in claim 8 that the transceiver unit has a device for parallel processing of a plurality of simultaneously received access code signals. This, of course, is not found in Wood nor does Wood provide any suggestion towards this modification. In fact, Wood teaches just the opposite and, if anything, would teach away from the invention recited in claim 8. Wood's circuit, upon recognizing a collision, is trained to reset the timing of the individual responding devices.

According to the Primary Examiner, "it would have been obvious to one of ordinary skill in the art at the time of the invention to have used parallel processing as suggested by Barham in the DSSS system of Wood." Final rejection, page 3. The conclusion is in error because, as explained above, Wood teaches away from parallel processing. Wood unambiguously teaches the resetting of the responding devices if a collision is recognized. The parallel processing of spread spectrum coded signals as provided by Barham does not properly modify the primary teaching of Wood to lead one of skill in the art to the claimed invention.

Not only is the required *suggestion or motivation* towards the combination lacking from the cited prior art, see Interconnect Planning Corp. v. Feil, 227 USPQ 543, 551 (Fed. Cir. 1985) (emphasis added), and there is no *clear and particular showing of combinability* found in the references, see Winner Int'l Royalty Corp. v. Wang, 53 USPQ2d 1580, 1587, 202 F.3d 1340 (Fed. Cir. 2000); Brown &

Williamson Tobacco Corp. v. Philip Morris, Inc., 56 USPQ2d 1456, 1459 (Fed. Cir. 2000), but the primary reference in fact teaches away from the combination. In other words, to combine the two references would not make any technical sense.

Conclusion:

Neither Wood nor any of the other references of record, whether taken alone or in any combination, either show or suggest the features of either claim 1 or claim 8. These claims are, therefore, patentable over the art of record and so are the dependent claims as they respectively incorporate all of the features of the patentable features of claims 1 and 8.

The honorable Board is therefore respectfully urged to reverse the final rejection of the Primary Examiner.

Respectfully submitted,

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Appendix - Appealed Claims:

1. A method for remote access control, which comprises:

providing a configuration having a transceiver unit for transmitting an interrogation signal and for receiving access code signals, and having an evaluation unit connected to the transceiver unit, for evaluating received access code signals and for outputting an access enable or inhibit signal in dependence on an evaluation result, and having a number of access code transmitters for receiving the interrogation signal and for transmitting a respective specific access code signal in reaction to receiving the interrogation signal;

outputting with the transceiver unit an interrogation signal configured to activate all the access code transmitters at the same time;

transmitting with each of the access code transmitters receiving the interrogation signal a respectively specific access code signal, substantially simultaneously; and

receiving the access code signals with the transceiver unit substantially simultaneously, and separating the access code signals on a basis of specific spread sequences applied to the signals.

2. The method according to claim 1, which comprises providing the configuration for radio access control to a motor vehicle, and utilizing the separated access code signals for enabling access to an interior of the motor vehicle or for activating an operating function of the motor vehicle.

3. The method according to claim 1, which comprises subjecting the access code signals to different spread sequences of spread spectrum processing in the access code transmitters and dispreading the access code signals in the transceiver unit using a respective corresponding inverse spread sequence.

4. The method according to claim 1, which comprises spread spectrum processing in the access code transmitters with a DSSS method, and carrying out digital signal processing in the transceiver unit for spreading in baseband.

5. The method according to claim 4, which comprises using mutually orthogonal spread sequences as the characteristic in the DSSS method.

6. The method according to claim 3, which comprises applying chirp sequence processing for spread spectrum processing in the access code transmitters, and applying corresponding delay-time-dependent filtering in an RF section in the transceiver unit.

7. The method according to claim 3, which comprises applying frequency-hopping processing for spread spectrum processing in the access code transmitters, and applying corresponding frequency-hopping dispreading in the transceiver unit.

8. A remote access control configuration, comprising:

a transceiver unit having an interrogation signal transmitter for generating and transmitting an interrogation signal, and a receiver for receiving access code

signals, said receiver having at least one section with a device for parallel processing of a plurality of simultaneously received access code signals in accordance with specific spread sequences superimposed on the access code signals;

a plurality of access code transmitters each having a receiving and activation unit for receiving the interrogation signal and for controlling an output of the respective access code signal, a memory for storing specific spread sequences to be superimposed on the access code, and a transmission stage including a processing unit for superimposing the specific spread sequences to the access code.

9. The configuration according to claim 8, wherein said transceiver unit is disposed in a motor vehicle and configured to control an access to the vehicle or to selectively activate an operating function of the motor vehicle, and said access code transmitters are portable units enabling access to the motor vehicle.

10. The configuration according to claim 8 configured for carrying out the method according to claim 1.

11. The configuration according to claim 8, wherein said interrogation signal transmitter in said transceiver unit, and said receiving and activation units in said access code transmitters are configured for inductive signal transmission.

12. The configuration according to claim 8, wherein said interrogation signal transmitter in said transceiver unit, and said receiving and activation units in said access code transmitters are configured for inductive signal transmission at a carrier frequency of 125 kHz.

13. The configuration according to claim 8, wherein said receiver in said transceiver unit, and said transmission stages in said access code transmitters are configured for carrying out UHF radio transmission.

16. The configuration according to claim 8, wherein said receiver in said transceiver unit has sections for parallel processing of different access code signals in baseband.

17. The configuration according to claim 16, wherein said receiver in said transceiver unit has a device for direct sequence spreading of an appropriately spread access code signal.

18. The configuration according to claim 8, wherein said receiver in said transceiver unit has sections for parallel processing of different access code signals in the RF stage.

19. The configuration according to claim 8, wherein said receiver in said transceiver unit includes time-variant filter components for despreading chirp-spread access code signals.